

CLIPPEDIMAGE= JP401184968A  
PAT-NO: JP401184968A  
DOCUMENT-IDENTIFIER: JP 01184968 A  
TITLE: MANUFACTURE OF LAMINAR PIEZOELECTRIC  
ELEMENT

PUBN-DATE: July 24, 1989

INVENTOR-INFORMATION:

NAME

OTSUKI, HIROTO  
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ASSIGNEE-INFORMATION:

NAME

HITACHI CHEM CO LTD

COUNTRY

N/A

APPL-NO: JP63010208

APPL-DATE: January 20, 1988

INT-CL\_(IPC): H01L041/08

US-CL-CURRENT: 310/311

ABSTRACT:

PURPOSE: To improve in productivity by a method wherein a laminate is built of piezoelectric material sheets and inner electrodes stacked up one upon another alternately, the laminate is subjected to sintering, the edge of every other inner electrode in one side of the laminate is subjected to electrolytic etching for the creation of a groove, and the groove is filled with an

insulating material which serves as an insulating layer.

**CONSTITUTION:** A green sheet is built of a calcinated piezoelectric material

powder composed mainly of lead nickel-niobate and lead titanate, and an AgPd

paste to be an inner electrode 2 is applied thereto by screen-printing.

About

fifty of such are stacked up and bonded into a laminate under a hot press. The

laminate is so cut in the direction vertical to the sheets that all the ends of

the inner electrodes 2 will be exposed in the sides of the laminate.

The

product is then subjected to sintering. A process follows wherein provisional

outer electrodes 8, 8' are built for the construction of a laminar piezoelectric body 9 of a laminar capacitor type. An electrolytic etching

process follows, wherein the end of every other layer attacked in the process

is replaced with a groove, in a side wherein inner electrode 2 are exposed.

Grooves are formed, similarly, in the other sides. An insulating paste is

allowed to flow into the thusformed grooves. The laminar piezoelectric body 9

produced in this way is cut at the provisional outer electrodes 8, 8', which

results in a laminar piezoelectric body 9' lacking outer electrodes. A conductive material is applied to insulating layers 3 in the laminar piezoelectric body 9' for the formation of outer electrodes 4.

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DERWENT-ACC-NO: 1995-072336  
DERWENT-WEEK: 199510  
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TITLE: Surface acoustic wave device for use as filter - has first layer thin film electrode layered on substrate and overlapped by second layer electrode, with migration tolerance and ratio resistance higher for first electrode than for second

PATENT-ASSIGNEE: HITACHI LTD[HITA]

PRIORITY-DATA: 1993JP-0140322 (June 11, 1993)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES
MAIN-IPC			
JP 06350377 A	December 22, 1994	N/A	006
H03H 009/145			

APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO
APPL-DATE		
JP06350377A	N/A	1993JP-0140322
1993		June 11,

INT-CL\_(IPC): H03H009/145

ABSTRACTED-PUB-NO: JP06350377A

BASIC-ABSTRACT: The surface acoustic wave device has a first layer electrode

(13) made of thin film layered on a piezo electric substrate (1).

Another

layer electrode (14) is layered on the first layer electrode. The first

layer  
electrode performs excitation, propagation and reflection of the  
surface  
acoustic wave.

The migration tolerance and ratio resistance the first layer electrode  
are  
higher than that of the other layer electrode. The first layer electrode  
is  
composed of 20% aluminium alloyed with one of the following  
materials : Ti, Pb,  
Nb, Ni, Mg, Ge, Si, Co, Zn, Ta, Au, Ag, Pt, Cr, Hf, Zr, Cd, Li or Cu.

ADVANTAGE - Provides wide range selection of electrode film  
material. Reduces  
ratio resistance and element loss. Improves power proof nature.  
Gives good  
characteristic and increases life time.

CHOSEN-DRAWING: Dwg.1/4

TITLE-TERMS:  
SURFACE ACOUSTIC WAVE DEVICE FILTER FIRST LAYER THIN  
FILM ELECTRODE LAYER  
SUBSTRATE OVERLAP SECOND LAYER ELECTRODE  
MIGRATION TOLERANCE RATIO RESISTANCE  
HIGH FIRST ELECTRODE SECOND

ADDL-INDEXING-TERMS:  
SAW

DERWENT-CLASS: U14 V06

EPI-CODES: U14-G; V06-K02; V06-K04;

SECONDARY-ACC-NO:  
Non-CPI Secondary Accession Numbers: N1995-057132

CLIPPEDIMAGE= JP409162682A  
PAT-NO: JP409162682A  
DOCUMENT-IDENTIFIER: JP 09162682 A  
TITLE: PIEZOELECTRIC RESONATOR

PUBN-DATE: June 20, 1997

INVENTOR-INFORMATION:  
NAME  
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ASSIGNEE-INFORMATION:  
NAME COUNTRY  
MURATA MFG CO LTD N/A

APPL-NO: JP07317727  
APPL-DATE: December 6, 1995

INT-CL\_(IPC): H03H009/17; H03H009/05 ; H03H009/13

ABSTRACT:  
PROBLEM TO BE SOLVED: To provide the piezoelectric resonator whose Qm value is rescued without caring about migration at a low manufacture cost.

SOLUTION: The piezoelectric resonator 1 is made up of a piezoelectric substrate 2 and vibration electrodes 3 to 5. The vibration electrodes 3 to 5 are made of conductors whose specific resistance is  $3 \times 10^{-6}$  ohm-cm or over. A base metal itself or an alloy whose major component is a base metal hardly causing migration at a low cost is preferred for the conductor. Concretely the

base metal such as Ni, Cu, Cr, Al, Fe, Sn, is a metal group except noble metals  
Au, Ag, Pt, Pd or the like and the base metal alloy is a Monel metal consisting  
of 70% of Ni and 30% of Cu.

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CLIPPEDIMAGE= JP411186625A  
PAT-NO: JP411186625A  
DOCUMENT-IDENTIFIER: JP 11186625 A  
TITLE: PIEZOELECTRIC ELEMENT

PUBN-DATE: July 9, 1999

INVENTOR-INFORMATION:

NAME	COUNTRY
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TANAKA, SHIGERU	
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WATABIKI, SEIJI	
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MIYATA, MOTOYUKI	
ISHIDA, TOMIO	N/A

N/A

N/A

N/A

ASSIGNEE-INFORMATION:

NAME	COUNTRY
HITACHI LTD	N/A

APPL-NO: JP09355487  
APPL-DATE: December 24, 1997

INT-CL\_(IPC): H01L041/083

ABSTRACT:

PROBLEM TO BE SOLVED: To improve the reliability of a piezoelectric element

without increasing the electrode cost of the element.

SOLUTION: A piezoelectric element has a laminated structure which is constructed by alternately laminating piezoelectric layers 10 made of a piezoelectric ceramic (such as lead titanate-lead zirconate, etc.), having a lead-based perovskite structure and inner electrode layers made of silver palladium, etc., upon another. However, a migration-resistant layer 12 made of a migration-resistant ceramic (a piezoelectric ceramic containing no lead) having a weaker piezoelectric property than the piezoelectric layers 10 have is interposed between each piezoelectric layer 10 and each inner electrode layer 11.

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